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FRENCH SMALL-ARM SMOKELESS POWDER.

ACCORDING to M. Pouteaux, in his work "La Poudre sans Fumée et les Poudres Anciennes," Dijon, 1892, the smokeless powder used in the ammunition for the French Lebel rifle, Pattern 1886, consists of a mixture of two parts of insoluble, to one part of soluble, nitro-cotton. He gives the following description of the manufacture:—"The above mixture is worked under light runners with 2 per cent. of paraffin and 20 per cent. of water, until it becomes thoroughly homogeneous. The very fine pulp thus obtained is pressed between some absorbent material to reduce the amount of moisture to about 5 per cent. The cakes from the press are broken up, and sifted on sieves of 0·6 mm. mesh, to thoroughly divide the material. The powder is dried and then submitted to the action of ether alcohol. The compressed paste is next rolled into sheets 0·5 mm. thick, and afterwards cut into squares the sides of which are 1·5 mm. long." As regards the properties of this powder, M. Pouteaux says that "it gives no smoke on firing and leaves no residue in the barrel except a few unconsumed grains. If well made, a charge of 2·8 gm. (43·21 gr.) will give a velocity of 625 m. (2,050·5 ft.-secs.) with an average pressure of 2,400 kilos. on the square centimetre (15¼ tons per square inch) in the French rifle, Pattern 1886. It slows down slightly for the first two months after manufacture, the charge being increased to 2·95 gm. (52·47 gr.), after which it becomes very stable, and it keeps well if the nitro-cottons are quite pure. The paraffin is added to diminish its sensibility to shock, and to slightly retard the rate of combustion."